|  |
| --- |
| **Lesson Title: Science Writing Heuristic** |
| **Subject area / course / grade level:4th grade science** |
| **Introduction: This lesson will explore energy used to bounce balls made of various materials.** |
| **Lesson Length: 2 45 minute class periods** |
| **Materials:**  **Beach ball, tennis balls, various bouncy balls, large white boards, markers, graph paper, data collection chart (teacher created)** |
| **Lesson Overview: Small groups of students (3-4 students) will choose a ball to bounce. They will track the height of 5 bounces at each specified height. Students will predict which balls will bounce “better” and at which height will they bounce the highest. Students will create graphs and tables to share data with class.** |
| **Tennessee Standards:**   * **GLE 0507.Inq.1 Explore different scientific phenomena by asking questions, making logical predictions, planning investigations, and recording data.** * **GLE 0507.Inq.2 Select and use appropriate tools and simple equipment to conduct an investigation.** * **GLE 0507.Inq.3 Organize data into appropriate tables, graphs, drawings, or diagrams.** * **GLE 0507.Inq.4 Identify and interpret simple patterns of evidence to communicate the findings of multiple investigations.** * **GLE 0507.Inq.6 Compare the results of an investigation with what scientists already accept about this question.** * **SPI 0507.10.1 Differentiate between potential and kinetic energy.** |
| **Lesson objective(s):**  **-The students will identify appropriate academic vocabulary used in the lesson.**  **-The students will use a written scientific method to track their experiments.**  **-The students will use prior knowledge to make predictions about bounce height of various materials.** |
| **ENGAGEMENT**  **Students will see a variety of balls placed on front work table. They will be asked to share general observations of the materials with their neighbor. This will be followed by a review of vocabulary, which will be placed on the wall. Toss a beach ball up and say “kinetic”. Catch it and say “potential.” Repeat again. Toss the beach ball to a student and say “kinetic.” Prompt the student to say “potential.” Allow students to toss the ball around a few times saying “kinetic” and “potential” at the right times.**  **Explain to student they will be designing a lab to test both kinetic and potential energy.** |
| **EXPLORATION**  **Students will “design” their lab to test the kinetic and potential energy.**  **Students choose their own ball (1 per group). Group will choose 4 heights at which to drop their ball (must be 15 cm apart). Students will drop the ball 5 times from each height and record on the data sheet.**  **Students will use their data to create a graph on their data sheet.** |
| **EXPLANATION**  **Groups will share their data with the whole group, along with their graphs. Students will observe similarities and differences between findings (both on data charts and graphs).**  **Students will discuss why different balls bounce to different heights and how it relates to the kinetic/potential energy idea expressed in the introduction.** |
| **ELABORATION**  **Students work with group to put their findings down in a paragraph form. (Teacher provided fill in the blanks on smartboard).**  **I can claim that the greater the potential energy, the \_\_\_\_\_\_\_\_ the kinetic energy because when the ball is dropped from a higher height,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The less the potential energy, the \_\_\_\_\_\_\_ the kinetic energy because when the ball is dropped from a lower height,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.”** |
| **EVALUATION**  **Students will reflect on the experiment on a separate response sheet (teacher created). Students will reflect on their data and findings. They will also be asked if they were to do the experiment again, what would they change or keep the same.** |